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1973-74 Progress Report

PLANT PROTECTION AND QUARANTINE PROGRAMS

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Animal And Plant Health Inspection Service
UNITED STATES DEPARTMENT OF AGRICULTURE

Issued November 1974

This publication reports activities involving pesticides. It does not contain recommendations for their use nor imply that the uses discussed here have been registered. All uses of pesticides must be registered by appropriate State and/or Federal Agencies before they can be recommended.

CAUTION: Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or other wildlife--if they are not handled or applied properly. Use all pesticides selectively and carefully. Follow recommended practices for the disposal of surplus pesticides and pesticide containers.

Trade names are used in this publication solely for the purpose of providing specific information. Mention of a trade name does not constitute a guarantee or warranty of the product by U.S. Department of Agriculture or an endorsement by the Department over other products not mentioned.

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1973-74 PROGRESS REPORT

PLANT PROTECTION AND QUARANTINE PROGRAMS

INTRODUCTION

This is the second Progress Report since the creation of the Animal and Plant Health Inspection Service (APHIS) and the formation of Plant Protection and Quarantine Programs (PPQ). Reporting is on a fiscal year basis.

Continued growth finds an organization which is better equipped to prevent the spread of pests which threaten America's food, fiber, and forest crops. Through a program of cross-utilization, a more effective work force is available to provide better coverage by moving trained personnel and their expertise into areas of high priority.

Plant Protection and Quarantine Programs represents a combination of programs and mutual goals in one unit. PPQ personnel are aware of pest movement potentials and the need for control and management of such movement. Training, development, and orientation will continue to refine techniques and improve ability to cope with plant protection and quarantine problems, whether in routine activities or emergency programs.

Today's actions against pest outbreaks have changed from those of just a few years ago. Plant Protection and Quarantine Programs now evaluates the best means of pest control and management with the least effect on the environment. Continued monitoring and evaluation of pesticides, search for means of biological control, and evaluation of the potential damage the pest may cause are all a part of the decisionmaking process in control and management programs.

AIRCRAFT OPERATIONS

PPQ aircraft were used to test new materials on a number of programs. This included spraying tests on gypsy moth, grasshoppers, and boll weevil, and spraying 100-micron capsules containing disparlure to attract gypsy moth.

Two aircraft have been equipped with aerial cameras and closed circuit television. They were used for color infrared photography in the citrus blackfly and gypsy moth defoliation programs in the United States, and in the citrus blackfly program in Mexico. Testing of various film/filter combinations on the gypsy moth program was compared with NASA's earth resources and Skylab imagery. Other photography was obtained for various citrus pest programs in cooperation with the Agricultural Research Service (ARS).

Other activities included contract supervision on boll weevil, imported fire ant, grasshopper, and gypsy moth programs, and defoliation survey on gypsy moth.

BARBERRY ERADICATION

Nineteen important grain-growing States are cooperating in the barberry eradication program. Of the original 1,073,000 square miles scheduled for barberry eradication work, only a little over 8,000 square miles remain to be placed on maintenance. During the reporting period, 1,843,260 susceptible barberry plants were destroyed and 457 square miles placed on maintenance.

Wheat stem rust was found overwintering in a nursery in Desha County in southeast Arkansas. This is farther north than overwintering has been reported in the past.

BOLL WEEVIL—TEXAS HIGH PLAINS

The cooperative High Plains reproductive diapause boll weevil suppression program in the western part of Texas continues to prevent western spread to uninfested States.

A total of 658,351 aggregate acres was treated in 1973 on the High Plains and in the Big Bend area of Texas along the Texas-Mexico border. Improved contractor performance, lower weevil populations, more efficient surveys as basis for treatment on an "as needed" basis, and generally favorable weather combined to make possible one of the best control programs in years.

Large-scale field trials were initiated on the High Plains to demonstrate the efficacy of areawide control using trap crops. Drought conditions and hail in the spring and early summer of 1974 resulted in the loss of dryland cotton in most areas, as well as a large portion of the field trials. Drought conditions may, however, allow for a more effective population suppression.

BURROWING NEMATODE

The U.S. Department of Agriculture and the State of Florida have signed a supplement to their Memorandum of Understanding to the effect that the USDA will phase out of the chemical barrier survey program by July 1, 1976, and phase down the survey in the "push and treat" areas. Growers will pay one half of survey costs in the "push and treat" areas from July 1974 through July 1976. The Citrus Industry Spreading Decline Commission recommended this change in policy.

During this reporting period, delimiting surveys were conducted on 1,239 acres, and 195 acres were pushed and treated. The laboratory processed 65,739 root samples. About 46 percent of these samples were from barrier surveys. About 19,860 lineal feet of chemical barriers were established, and 1,388 lineal feet of barriers were maintained.

CEREAL LEAF BEETLE

The 1974 survey did not detect any western movement of the cereal leaf beetle. The surveys in Iowa and Minnesota were negative. No additional spread was found beyond the four-county infestation in Missouri. Berkshire and Hampshire Counties in Massachusetts were found infested. This is the first record of infestation in the New England States. Delaware was found infested for the first time. A third county was found infested in New Jersey. Surveys to date have established infestations in Delaware, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, Missouri, New Jersey, New York, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and Wisconsin.

The cereal leaf beetle egg parasitoid was released at 161 sites in four States. Larval parasitoids were released at 372 sites in nine States. The egg parasitoid is now widely dispersed, having been recovered in six States. Four larval parasitoids have become established in five States. There are 23 field insectaries established for the production of larval parasitoids. Three of these are producing larval parasitoids for releases in new areas. The egg parasitoid is produced in the laboratory for field release. Production and release of parasites is a major program function.

The Federal quarantine and parallel State quarantines were revoked on October 1, 1973. Quarantine action was not effective in preventing yearly natural spread.



Figure 1.--Left: Parasites attacking cereal leaf beetle eggs;
Right: Parasites attacking cereal leaf beetle larvae.

CITRUS BLACKFLY

Citrus blackfly was found on citrus in Brownville, Tex., in April 1971. Despite repeated insecticide applications to infested properties in Cameron County, Tex., this year, the citrus blackfly infestation continues to persist and spread. The program was designated an emergency in February 1974, and its direction became the responsibility of PPQ's Emergency Programs staff. A Federal quarantine was promulgated in March 1974 to more effectively combat the pest. Regulatory measures continue to protect the other four noninfested citrus-growing areas in the United States.

A twofold suppressive program was initiated. Within the cities of Brownsville, Tex., and Matamoros, Mexico, the core of the infestation, an integrated biological-chemical control approach was implemented. Parasites were collected in southern Mexico for colonization in the core area. In the infested groves surrounding Brownsville, chemical sprays were integrated with grove-care programs conducted by citrus growers. Backyard trees were also treated in infested areas.

The suppressive measures in Cameron County checked the infestation upsurge, and biological control can be introduced to a larger area. A part of the program was to keep citrus blackfly out of Hidalgo County where 82 percent of the citrus in Texas is grown. However, in May and June 1974, the pest was discovered on backyard citrus trees within the city limits of McAllen, Tex. The only other Hidalgo County infestation--in Mission, Tex.--had been eliminated early in 1973.

Agricultural Research Service and PPQ's Methods Development Staff are involved in efforts at Brownsville and General Teran, Mexico, to produce parasites (up to 100,000 per week in the near future), develop trapping techniques, and screen insecticides for ground and aerial application.

ECOLOGICAL EVALUATIONS

The mirex monitoring program continued with some modifications during the reporting period. The basic sampling unit remained as a 10-acres site, representing 20,000 acres of treated land. Approximately 500 such sites were monitored in the fall of 1973 and 150 sites in the spring of 1974. Environmental components sampled included soil, sediment, mammals, birds, fish, and crayfish. Water and vegetation were eliminated from the monitoring program because of the extremely low residues of mirex found in samples the three previous seasons.

Plans were developed early in 1973 to automate the data processing and analysis of the residue data. In December 1973, a Data 100 terminal, consisting of a card input, card output, and printer, was acquired by the Ecological Evaluations staff. The terminal was coupled to the New Orleans Computer Center (NOCC) and to the Division of Computer Research and Technology (DCRT), National Institutes of Health. With computer support established, a report on the basic biometric analysis of the entire 1972 and spring 1973 monitoring data was completed by July 1, 1974.

The Environmental Monitoring Laboratory in Gulfport, Miss., is being expanded to house a gas chromatograph-mass spectrometer-data analysis system. Construction is nearing completion, and acquisition of the equipment is scheduled for November 1974. Other new equipment includes two automatic gel permeation systems which will be used to expedite the cleanup of environmental samples.

ECONOMIC INSECT SURVEY AND DETECTION

During the reporting period, 17 insects new to the United States were reported through the "Cooperative Economic Insect Report." Of these, six were reported from Hawaii (banana skipper, an encyrtid wasp, a lygaeid bug, a muscid fly, a noctuid moth, and a pteromalid wasp), three plant bugs from Pennsylvania, two from Florida (a soft scale and a weevil), and one each from Georgia

(a thrips), Maryland (a click beetle), Massachusetts (a braconid wasp), New Jersey (European alfalfa beetle), South Dakota (an aphid), and Virginia (a eulophid wasp).

The detection of European alfalfa beetle in New Jersey is probably the most significant of these new finds. This phytophagous coccinellid, in the same subfamily as Mexican bean beetle, has been reported as serious on alfalfa in Hungary, the U.S.S.R., and Yugoslavia. Minor feeding on sugar beet, carnation, and bouncing-bet has also been reported.

Of the six reported in Hawaii, banana skipper is known to damage banana. Other recorded hosts include sugarcane, coconut, and palm. The muscid fly is reported to be a shoot borer, the only recorded host being Bermuda grass. Larvae of the noctuid moth are known to damage corn, sorghum, sugarcane, and other grasses. The pteromalid wasp is a parasite of bamboo powderpost beetle and has been recorded as being reared from rice weevil. The encyrtid wasp could be beneficial. The lygaeid bug is known only from specimens collected in light traps. None of these species are known to occur in the continental United States.

The three plant bugs recorded from Pennsylvania are known to occur in Europe, Asia, or Africa, but there have been no reports of damage to their evergreen hosts in these areas. The weevil in Florida is a pest of Maliphigia spp. It also has been found on leaves of bulrush (Scirpus validus) and reared from the fruit of false-coffee (Faranea occidentalis). The soft scale reported from Florida was intercepted on an orange plant (leaves) from that State at Yermo, Calif. This coccid has been suspected to have been in Florida for some time, but this is the first record. It is also a new continental U.S. record. The thrips reported in Georgia was also a new continental record, being known to occur in Hawaii. It is often intercepted on Lycoris bulbs from Japan and on cut flowers from Bermuda.

The lack of information available on the larvae and the biology of the click beetle found in Maryland would indicate it is of no economic importance. The braconid wasp reported from Massachusetts is a parasite of asparagus miner (known to occur in the United States) and was probably an accidental introduction. Nothing is known about the aphid found in South Dakota. The eulophid wasp reported from Virginia was reared from a leaf beetle, but the economic importance of this parasitic species is not known.

There were 113 new State records of species already known to occur in the United States.

At the close of the reporting period cooperative agreements were in effect with 44 States. Of these, 31 were standard agreements and 13 were modified. New Mexico changed from a modified agreement to the standard agreement, effective January 1, 1974. About 700 cooperators submitted more than 1,800 reports on insect conditions in the United States for inclusion in the weekly issues of the "Cooperative Economic Insect Report."

The exotic wood-boring insect survey was started June 4, 1974, at Savannah, Ga. This is a biometrical detection survey.

A total of 323 blacklight traps was operated in 38 States at locations considered hazardous as entry points for foreign pests.

EMERGENCY PROGRAMS

This program takes emergency action to eradicate, suppress, or prevent spread of new, dangerous plant pests in the United States. The program also assists APHIS Veterinary Services (VS) in control or eradication of animal diseases where insect control is an integral part of the problem.

Criteria are being developed for ranking and listing the high-risk foreign insects and plant diseases. This will enable defining and evaluating foreign pest risk to the United States at any geographical location.

A new plant pest, European alfalfa beetle, was detected in New Jersey in June 1974. This insect is reported to be a serious pest of alfalfa in Europe. Other PPQ staffs assisted in making delimiting surveys and evaluating the need for control.

Assistance on delimiting surveys was also provided for the introduced banana skipper on Oahu, Hawaii. When it was determined to control the pest through biological control, PPQ coordinated the request with Agricultural Research Service for support in parasite exploration and colonization. The skipper has been kept under good control in Guam through the use of parasites.

Six PPQ control specialists will serve as Vector Control Officers to Veterinary Services Regional Emergency Animal Disease Eradication Organizations (READEO). They will participate in Emergency animal disease actions involving insect vectors.

Personnel training and program development are important parts of Emergency Programs. An Emergency Vector and Pest Control Workshop was held in April. The workshop, sponsored jointly by VS and PPQ, was designed to prepare selected VS and PPQ personnel to conduct emergency vector and pest control operations in support of animal disease eradication programs. A test exercise involving an insect vector was conducted. A joint VS-PPQ hog cholera vector (tabanid fly) control exercise was conducted in Mississippi in May 1974.

Preplanning is also an important part of Emergency Programs. Rosters of State and Federal personnel by specialty are being developed. Seventeen States have developed or are in the process of completing rosters. Commercial supply and technical sources are a part of this roster also. Guidelines for emergency actions have been developed and will be issued in manual form.

The Emergency Programs staff participates in providing international technical assistance to the Agency for International Development and the Food and Agriculture Organization. A four-man team from APHIS directed emergency control activities in Pakistan against a serious outbreak of rice pests following a disastrous flood. The effort was successful in protecting the remaining crop. The team received a Superior Service award for their work. An evaluation was made of a potentially serious locust infestation in central and eastern Africa. As a result of this evaluation, a three-man PPQ control team went to central Africa in July to provide guidance in control operations.

On June 30, PPQ completed its commitment of personnel to assist with pest control in Ethiopia which began in 1952. The close ties established during this period are expected to be maintained.

GIANT AFRICAN SNAIL

Eradication of the giant African snail in Florida is projected for 1975. No live snails have been found since April 1973. Seven of the nine residential localities originally infested in 1969 have been released from regulation. The remaining two localities in Dade County are under Federal quarantine until surveys determine these areas to be snail-free for 2 years. All pesticide treatments were discontinued in April 1974.

GOLDEN NEMATODE

The objective of eradication of golden nematode from host cropland in the United States still appears valid. The country-wide biometrical survey has failed to show any infestation outside New York State.

A golden nematode resistant potato variety, Hudson, was planted on approximately 350 acres on Long Island. If seed is available, it is expected that there will be an increase in acreage planted to Hudson in 1975.

Furadan, a systemic pesticide, is registered for use on potatoes by New York for control of Colorado potato beetle. It was used on an estimated 80 percent of the potato acreage on Long Island at 3 pounds per acre at planting. This chemical is also a systemic nematicide and had some benefit for control of golden nematode.

Two new mechanical soil samplers will be put in field use in fiscal year 1975. One is a vacuum soil sampler, and the other is a wheel-type sampler that takes plugs of soil a predetermined size and distance apart.

During the reporting period, 832 acres were fumigated on Long Island using Vorlex and D-D. On August 3, 1973, viable cysts were found in a hedgerow bordering a previously infested field in Steuben County. This area was treated with Vapam.

GRASSHOPPER AND MORMON CRICKET

Approximately 1,921,000 acres of rangeland in nine Western States and Texas were treated with ultralow volume malathion at 8 ounces per acre. Approximately 1,631,000 of these acres were treated in July and August 1973. This was in line with the 1972 fall adult surveys which indicated heavy populations for the following season. The balance of the acreage was treated in June 1974.

Adult surveys in 1973 showed economic populations of eight or more grasshoppers per square yard on 8,709,097 acres in 14 Western and Midwestern States. This was about one-half of the acreage indicated by the 1972 adult surveys. Spring nymphal surveys in 1974 revealed that grasshopper populations were down considerably over 1973 with the heaviest infestations being found in Wyoming.

Approximately 35,000 acres in Montana and Nevada were treated for control of Mormon crickets, the long-horned grasshoppers. This compares to 11,362 acres treated in Idaho and Montana in 1973. This is the largest acreage treated since 1959 when approximately 62,000 acres were treated.



Figure 2.--Field surveys indicate the extent of grasshopper infestations and the need for control.

GYPSY MOTH

In the detection survey program, about 60,000 traps were placed in 34 States. A private organization, the National Campers and Hikers Association (NCHA), participated in this activity, handling about 16,000 traps nationwide. Various other Federal and State agencies also cooperated in the program. By the end of the survey season, male moths had been trapped for the first time in 67 counties in 15 States. Moths were found for the first time in six States--California, Florida, Georgia, Illinois, Indiana, and Kentucky. Aerial defoliation surveys conducted in the infested Northeastern States revealed about 1,700,000 acres of woodlands noticeably defoliated by the gypsy moth.

Eradication efforts were continued against an infestation, found in Michigan in 1972, with the aerial application of carbaryl (Sevin 4 Oil) to 21,728 acres. Isolated infestations involving 400 acres in Winston-Salem, N.C., and 1,000 acres in Smyth County, Va., were aeri ally treated with Sevin 4 Oil.

In the continuing program to reduce hazardous pest populations at infested campsites, military facilities, and other areas in the Northeast, aerial applications of insecticides were completed on 29,538 acres. Additional acreage of this nature was treated with ground equipment. Carbaryl (Sevin 4 Oil and Sevin 80 Sprayable) was used for this purpose.

Tests are in progress to determine the effectiveness of various laboratory-screened pesticides for controlling gypsy moth under field conditions. This work is directed by the Gypsy Moth Methods Development Laboratory, Otis Air Force Base, Cape Code, Mass. Field trials were initiated in cooperation with the Agricultural Research Service and certain States to obtain more information on the control capabilities of the synthetic sex pheromone, disparlure.

Federal quarantine regulations were revised in May 1973 to exempt stone and quarry products from certificate and permit requirements if not exposed to infestation. No changes were made in the area currently under regulation for the pest.

The New Jersey and Maryland Departments of Agriculture, under cooperative agreements with the U.S. Department of Agriculture, reared and distributed 503,000 parasitoids of various species to five States.



Figure 3.--Treatment of recreation area to reduce the hazard of gypsy moth spread by recreational vehicles.

IMPORTED FIRE ANT

The controversy concerning the use of mirex bait continues. Since the public hearings are still in progress, the Environmental Protection Agency (EPA) extended the label for the fall and spring part of the control program. During the spring program, EPA surveillance teams monitored treatments over sensitive areas in all States.

During the reporting period, 13.6 million acres were treated with a high degree of control. Some delays and curtailment of acres treated resulted from a shortage of corncob grits, the inert ingredient of mirex bait. Aquatic habitats and areas of low density infestation, such as heavily forested areas, were not treated.

State and Federal quarantines are in effect in nine Southern States--Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas. The list of regulated articles was revised so that houseplants grown in the home and not for sale are no longer regulated. The infested acreage in the nine States has increased to approximately 133 million acres.



Figure 4.--Imported fire ant mounds (nests) interfere with farming operations in rural areas and use and maintenance of property in urban areas.

JAPANESE BEETLE

During the 1973 adult survey season, beetles were trapped for the first time in 18 counties in 9 States. Of significance was the detection of an isolated infestation in San Diego, Calif., in July.

Eradication treatments were initiated at the site of the San Diego infestation with soil surface application of chlordane on about 1,100 acres. This was supplemented with carbaryl foliar sprays applied about every 10 days until the end of September.

Treatments were conducted to suppress beetle populations at infested sites in 23 States. These involved soil applications of pesticides to 4,694 acres and carbaryl foliar sprays to 5,952 acres. PPQ cooperated with four States in the application of milky disease spore dust to 280 acres of turf.

Because of heavy adult beetle populations and consequent potential for infesting aircraft, Dover Air Force Base, Del., was declared hazardous during June 27 to July 17, and McGuire Air Force Base, N. J., was similarly classified during July 10 to July 17. During these periods, 157 aircraft at Dover and 65 aircraft at McGuire were treated with micronized DDT/carbaryl dust prior to departure to noninfested destinations. Beetle populations at both airfields were reduced to nonhazardous levels by the aerial applications of carbaryl to 1,934 acres at McGuire and 2,600 acres at Dover.

Military and PPQ specialists again visited the island of Terceira, Azores, to review the results of the past season's trapping activities and to recommend control procedures.

The Federal quarantine was amended effective June 19 to drop from regulation houseplants grown in the home and not sold commercially.

KHAPRA BEETLE

The 1974 survey of grain storage areas confirmed that the United States remains free of khapra beetle. The last established infestation was eradicated in 1966.

In Mexico, detection surveys were made in cooperation with the Sanidad Vegetal. Inspections were mostly of foreign ships arriving at Mexican ports and of unloaded cargoes. In May, a foreign ship unloaded 226 tons of infested cargo at Coatzacoalcos and Veracruz. Eradication action required 11,428 cubic feet of fumigation.

MEDITERRANEAN FRUIT FLY

No Mediterranean fruit flies were trapped in 1974 in the continental United States and Mexico. Trapping for detection of this fruit fly is conducted in Arizona, California, Florida, Louisiana, and Texas. A cooperative trapping program is also conducted along the border of Mexico and Guatemala to detect spread from infested Central American countries.

PPQ and the Agricultural Research Service are conducting a full-scale field test in the Hawaiian Islands, where the Mediterranean fruit fly occurs, to determine the effective range, the optimum lure concentration, and the relative efficiency of the Steiner versus the cardboard trap.

METHODS DEVELOPMENT LABORATORIES

Plant pest survey, regulatory, and control activities are dynamic; therefore, constant developmental work is required to keep abreast of new and changing needs. The Methods Development group conducts an organized applied research and development program oriented to program needs. The basic objectives are to answer immediate problems which arise in program operations and develop new approaches to attain the programs objectives. Current efforts include establishing new and revising the old treatment procedures and schedules for fumigants, herbicides, insecticides, cold treatments, irradiation, and commodity tolerances; developing more effective controls through the use of chemicals, biologicals, parasitoids, sterile insects, and pheromones; and developing and testing new or improved detection tools such as mechanized soil samplers, traps, and pheromones.

MEXICAN FRUIT FLY

Detection surveys are conducted in Arizona, California, Florida, Louisiana, and northwest Mexico. Surveys are also conducted in northern Mexico and southern Texas for population assessment. Between June and November 1973, over 700,000 sterile flies were released per week in northwest Mexico to overflow any native flies that had become established.

A female fly was trapped in October 1973 in National City, Calif., near San Diego. Additional traps were placed around this find with negative results.

Continuous trapping in Carrizo Springs (Dimmit County), Tex., revealed a buildup of flies. Populations were high enough to justify sterile releases in April. A total of 500,000 sterile flies was released during a 5-week period.

ORIENTAL FRUIT FLY

A single male oriental fruit fly was detected in a Steiner trap at Encino (Los Angeles County), Calif., in September 1973. A State-Federal cooperative eradication program was immediately initiated. Trapping was increased to five traps per square mile within an 81-square-mile area. Following 2 weeks of survey, a bait formulation, consisting of the attractant methyl eugenol, insecticide naled, and a thickening agent, was applied to 600 sites in each square mile at 2-week intervals in the core area. Four applications were made. Intensified trapping continued for 4 months with negative results. The infestation is considered eliminated. This is the twelfth time oriental fruit fly has been detected in California in the past 13 years.

PEST MANAGEMENT

The cooperative pest management program, initiated with the funding of two projects in 1971, was expanded to 22 projects in 1972. In 1973, another 17 projects were added bringing the total to 39 projects in 29 States. No new projects were added in 1974, but existing ones were expanded because of grower demand.

PPQ cooperates with the Extension Service, State experiment stations, State departments of agriculture, and local growers in this program. Objective of the program is to develop and implement a pest population suppression system using a combination of techniques including biological, cultural, varietal cropping systems, production practices, and chemicals. Advantages of this integrated approach include lower production costs and minimum pollution of the environment.

PPQ's main responsibilities in this program, in addition to providing regulatory support, include data collection, computerization and analysis, and environmental monitoring. The States involved and projects are:

<u>State</u>	<u>Project</u>
Alabama	cotton
Arizona	cotton
Arkansas	cotton
California	cotton & pears
Delaware	peppers & potatoes
Florida	citrus
Georgia	cotton
Idaho	potatoes
Illinois	corn
Indiana	corn & alfalfa
Iowa	corn
Kansas	grain sorghum
Louisiana	cotton
Maryland	sweetcorn & beans
Michigan	apples
Mississippi	cotton
Missouri	cotton & corn
Nebraska	corn & grain sorghum
New Jersey	sweetcorn & lettuce
New Mexico	cotton
New York	apples
North Carolina	tobacco & cotton
Ohio	corn
Oklahoma	cotton & grain sorghum peanuts
Pennsylvania	apples
South Carolina	cotton
Tennessee	cotton
Texas	cotton, grain sorghum & peanuts
Washington	alfalfa seed & deciduous fruit

Present evidence indicates that the pest management projects have reduced pesticide use in crops such as cotton, apples, and others. In other projects, however, there has been an actual increase in pesticide use because the evaluation of pests in the crop has revealed that economic losses were being suffered without the knowledge of the grower.

Data collected in the course of these projects are presently being set up in such a manner that we can use it in verifying production and prediction models with the ultimate purpose of developing a capability for predicting pest outbreaks in agriculture.

PEST SURVEY AND TECHNICAL SUPPORT

During the reporting period, 102 decisions were made on application requests for importations of various fruits and vegetables under Foreign Quarantine 56. Forty-nine requests were approved and 53 disapproved. Countries with results of decisions made are:

<u>Country</u>	<u>No. approved</u>	<u>No. disapproved</u>
Australia (mainland)	1	13
Australia (St. of Tasmania)	10	10
Brazil	2	1
China		1
Colombia		1
Dominican Republic	3	1
Ecuador	1	
Europe		3
Fiji (Nadi)		1
Guyana	3	
Hong Kong	1	
Japan	1	7
Korea	3	3
Lebanon	1	
Mexico	3	
New Zealand	5	6
Nicaragua	1	
Nigeria	5	
Panama		1
Peru		1
Portugal		1
South Vietnam	3	
Spain	1	
Taiwan	1	
U.S.S.R.		3
Venezuela	4	

Annual Report of Intercepted Plant Pests
Identified--Fiscal Year 1974

Region	No. determined by inspector	No. determined by identifier	No. referred to specialist	Total
Northeast	9,509	8,995	3,731	22,235
Southeast	2,997	7,129	3,260	13,386
South-Central	16,608	7,467	3,046	27,121
Western	30,348	14,449	6,823	51,620
Plant Importation Office	1,056	1,056	323	2,435
Total	60,518	39,096	17,183	116,797

During FY 1974 a total of 1,274 permits were issued under the Federal Plant Pest Act by the Technical Support Staff (T) and Plant Importation Office, Hoboken (H):

	<u>Research</u>	<u>Commercial</u>	<u>Collectors</u>	<u>Courtesy</u>
Insects and mites	339 (T)	60 (T)	32 (T)	29 (T)
Snails	24 (H)	14 (H)	3 (H)	3 (H)
Plant pathogens and cultures	492 (t)	92 (T)		7 (T)
Soil	78 (H)	93 (H)	6 (H)	1 (H)

During the same period, 42 inspectors at ports of entry were given final authority to identify 230 plant diseases, and 81 inspectors were given similar authority for 936 insects. Discard authority is given to personnel when they have demonstrated that they can identify intercepted pests.

PINK BOLLWORM

Objective of the pink bollworm program is to prevent spread to uninfested cotton-producing areas in the United States (approximately 50 percent) and to determine if the pest can be eradicated using a combination of the newest techniques. The sterile moth release program continues to prevent establishment of pink bollworm populations of economic importance in the San Joaquin Valley of California. Approximately 90 million moths were released by aircraft from May 15 through November 16, 1973.

A total of 25 native moths was trapped in Kern County of the San Joaquin Valley in California. The first was recovered August 13, 1973. No larvae have been found since 1970. Approximately 50,000 traps were serviced in an estimated 1 million acres at the rate of 1 trap per 20 acres of cotton. Biometrically designed detection surveys were conducted in noninfested States; no significant change in infested area was noted.

Mass-rearing problems were encountered--including, mites, viruses, and nonuniform media materials. Investigations are continuing with the rearing techniques. The old Texas strain of pink bollworm moths, which had been in the rearing facility since 1966, was changed to the Tucson strain in January 1974. A microsporidium disease and a cytoplasmic virus disease were present in the Texas strain. It was felt necessary to replace the colony with a new, healthier strain more typical of the southwestern desert environment.

Approximately 34 million sterile moths were released in Florida through June 30, 1974. Releases were low during March through June due to disease problems and cleanup of the Phoenix facility.

The Texas facility became operational in June. However, all pupae were diverted to Phoenix to aid in furnishing moths to California.

Two parasites are being released in Florida. The egg/larval parasite, Chelonus blackburni, released late in fiscal year 1973, has been recovered at low percentages. Bracon kirkpatricki (Williamson) was released early in calendar year 1974. Both parasites are still being evaluated.

A methods development saturation trapping test in an area of isolated cotton near La Paz in Baja California was undertaken with Mexico in April 1974. Both countries have a mutual interest in running tests in an isolated cotton-growing area to determine the feasibility of eradicating the pink bollworm. The tests will continue into fiscal year 1975.

Gossyplure, the new sex attractant and synthetically produced natural pheromone, was developed late in calendar year 1973. By July 1974, the new lure had replaced hexalure. Early data indicate a possible fifteenfold increase in effectiveness.

Some changes have been made in pink bollworm regulatory procedures as a result of the program appraisal made in 1972-73. The review of pink bollworm policies and procedures will continue, and further recommendations will be discussed with the cooperators.

PORT OPERATIONS

Agricultural quarantine inspection at ports of entry play an important role in protecting the Nation's crops, livestock, forests, and ornamental plantings against additional agricultural pests. Its principal responsibility is to guard against the entry of harmful foreign plant and animal pests into the United States. It is also responsible for preventing pest movement from offshore U.S. areas to the mainland and between such areas. These responsibilities are accomplished by inspection staffs at all major air, sea, border, and offshore ports. Inspectors work in cooperation with other border clearance agencies in the examination of passengers, their baggage, and means of conveyance. Cargoes of both agricultural and nonagricultural nature are also inspected. Treatments or other safeguards may be applied to ensure that harmful pests do not enter the United States. Foreign mail parcels are inspected in cooperation with U.S. Customs Service.

In addition, inspectors certify American-grown plants and plant products to meet the entry requirements of importing countries.

During the reporting period, a study was begun to develop a biometrically designed inspection technique for wood borers in crating on miscellaneous cargo shipments. This inspection technique has been used successfully on imported shipments of fruits and vegetables. The inspection of biometrically selected samples provides a more effective inspection, reduces inspection time, and provides better security against pest introductions.

An important activity involves the preclearance of agricultural commodities in countries of origin under cooperative agreement between foreign exporters and APHIS. At the request and expense of the exporters, personnel inspect and/or supervise the treatment of various commodities to meet U.S. entry requirements. This service benefits American agriculture by eliminating the pest at the source. In fiscal year 1974, inspectors participated in programs in Mexico, Chile, Haiti, Japan, Italy, and other European countries. Additional inquiries were received from exporters in Morocco, Belize, France, Spain, Brazil, and the Dominican Republic.

In order to keep pace with the ever-increasing movement of carriers and cargoes to interior U.S. destinations, the cross-utilization of other APHIS program inspectors continues to be an important facet of this program. During the reporting period, there were over 300 separate cross-utilization efforts at locations throughout the United States.

In anticipation of the promulgation of new regulations for the handling and disposal of garbage arriving on foreign carriers, eight ports of entry improved their disposal capabilities. Fifty-five airbases have been approved for handling disposal of foreign-origin garbage.

New shipboarding guidelines have been finalized. These guidelines will help achieve shipboarding uniformity and require less man-hours to board coastwise vessels. They permit use of certain agricultural products onboard vessels that heretofore had to remain sealed. The emphasis will be on strict garbage handling.

During the reporting period, PPQ representatives participated in the preclearance of two military movements returning to the United States. Both inspection and clearance operations were carried out at locations in Germany.



Figure 5.--PPQ inspector examines air cargo for "hitchhiking" agricultural pests.

PROFESSIONAL DEVELOPMENT

A number of technical and supervisory training needs, as identified by line managers and the Professional Development Staff, were satisfied as a result of both localized on job training and workshops and formal learning programs.

New or improved technical learning programs included biological control, ecology, fumigation procedures, and aircraft clearance. These supplemented existing programs in foreign pest identification, LASH barge cargo inspection, and environmental impact. In addition, a cooperative effort with Veterinary Services was carried out to increase combined program capabilities in vector and pest control emergency operations.

In the supervisory and management training area, actions included basic supervisory training, managerial grid, labor-management relations, administrative procedures, and appraisal and counseling practices.

Actions directed towards non-PPQ employees included international training for foreign students, Military Quarantine Inspector training for Air Force personnel, regulations and entry requirements for Navy supply officers, and orientation to program operations for State cooperators.

Efforts are also being devoted to animal byproducts and merit promotion training. In addition, a review of needs of clerical/secretarial and inspector employees has been initiated.

RANGE CATERPILLAR

Damaging population developed in Chaves and Lincoln Counties, N. Mex., during the summer of 1973. Control was required on 246,000 acres of rangeland infested with both range caterpillars

and grasshoppers. Tests had demonstrated that Sevin 4 Oil was effective for both pests. Sevin 4 Oil, diluted with fuel oil, was applied at 20 fluid ounces containing 1/2 pound active ingredient per acre. Excellent control was obtained.

Field trials were conducted near Roswell, N. Mex., in cooperation with State and University of New Mexico personnel, to determine the effectiveness of pesticides on both grasshoppers and range caterpillars.

The following insecticides showed strong promise in the control of a combination of range caterpillars and grasshoppers: Malathion (ULV)--8 ounces per acre, plus Dylox (ULV) at 0.25 pound per acre; Sevin 4 Oil--0.50 pound per acre; and Orthene--0.50 pound per acre. Promising treatments for small range caterpillars include comparable amounts of three formulations of Dylox--1.5 pounds per gallon in oil, 3.2 pounds per gallon in oil, and ULV appeared equally effective.

SAFETY AND OCCUPATIONAL HEALTH

A new comprehensive safety and health program was implemented January 1, 1974. The plan utilizes a Regional Safety and Health Committee to advise Regional Directors on problems in safety and health. The goal is to insure all employees a safe and healthful work place. Each State, port, and laboratory has a safety officer or safety committee to (1) identify unsafe conditions, (2) make recommendations for corrections, (3) keep employees informed on safety and health matters, and (4) promote safety in the work place.

A cadre of trained accident investigators is available to determine causes of accidents resulting in serious or handicapping injuries. The investigators will function across program and regional lines and within other APHIS program areas as needed. The information and data obtained in the investigative process will be used in accident prevention programs.

WEST INDIAN SUGARCANE ROOT BORER

The West Indian sugarcane root borer, a native of the Caribbean region, was found in the continental United States in September 1968. Although it has a host range of 200 different plants, citrus appears to be the primary host in Florida. There are 8,500 acres of citrus in the regulated area. The ability of the larvae to live several years in the soil on roots as much as 7 feet below the surface indicates an adaptability to a wide range of ecological conditions. Citrus trees being attacked may show severe decline symptoms, complete production loss, or mortality. Biometric surveys are conducted on a 25-mile radius around the regulated area to determine spread. This is an ongoing program, and soil and foliage treatments are applied throughout the year.

The State of Florida, Agricultural Research Service, and Animal and Plant Health Inspection Service are working on better control and survey techniques, basic life-history data, and parasite rearing. A recent breakthrough has been a treatment for ball-and-burlap nursery stock moving out of the regulated area. PPQ is assigning an entomologist to Puerto Rico to work on this insect in its native environment.

The program objective continues to be one of preventing spread and determining feasibility of eradication.

WHITEFRINGED BEETLE

Adult whitefringed beetles were collected for the first time in five counties in five Southern States currently under Federal quarantine.

Following a public hearing held in Memphis, Tenn., in September 1973, the Federal quarantine was extended to include the States of Kentucky, Missouri, and Texas effective June 18, 1974. Quarantine regulations apply to only small portions of each State. Concurrent with this action, the quarantine was amended to remove compost, decomposed manure, humus, and peat from regulation and exempted transplants from quarantine requirements if substantially free of soil.

WITCHWEED

Success of the witchweed program has lead to the adoption of an intensive suppression program on approximately 14,000 acres around the outer periphery of the infestation. Control procedures developed by the Witchweed Laboratory are being utilized in the suppression program. These include the use of ethylene injected into the soil to germinate witchweed seed. During May and June, 10,671 initial acres were treated with ethylene, largely in the intensive suppression area. Guidelines have been developed for use in all situations in which witchweed must be controlled in the intensive suppression area. When areas are removed from regulation, as a result of a successful completion of intensive suppression, additional acres will be placed in the intensive suppression program. Sufficient control operations will be carried out in the core area to keep seed production to a minimum. Paraquat and 2,4-D were applied to 1,273 and 81,789 initial acres, respectively.

SUMMARY OF ACTIVITIES--FY 1974
AGRICULTURAL QUARANTINE INSPECTION

	<u>1974</u>	<u>1973</u>
I. <u>Airplanes</u>		
Inspected upon arrival	273,337	275,698
With prohibited material	117,568	119,104
Travelers' bags processed	43,622,954	42,557,923
Inspected before departure ^{1/}	38,141	47,737
With prohibited material	15,509	19,575
Travelers' bags processed	11,590,963	9,891,079
II. <u>Ships</u>		
Boarded and inspected	73,006	77,295
With prohibited plant material	28,146	32,848
With prohibited animal products	31,343	37,532
Travelers' bags processed	3,823,628	3,975,112
III. <u>Mexican Border</u>		
Vehicle entering	42,953,456	41,030,490
Railroad cars entered ^{2/}	87,142	75,044
Pieces baggage & mandato processed ^{3/}	45,449,865	43,389,707

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- ^{1/} Plane inspected in Hawaii, Puerto Rico, the Virgin Islands, Bahamas, and Bermuda before departure for the U.S. mainland.
- ^{2/} Excludes tank and hopper cars.
- ^{3/} Mandato includes bags containing groceries and miscellaneous merchandise.

	<u>1974</u>	<u>1973</u>
IV. <u>Mail</u>		
Foreign packages entering	59,149,136	69,097,580
Packages of agriculture interest	200,917	171,046
Packages refused entry	2,470	1,704
Domestic mail packages processed ^{4/}	4,999,125	6,207,487
Packages of agriculture interest	24,436	29,478
Packages refused movement to mainland	216	365
V. <u>Cargo Inspection</u>		
Entries under permit	134,345	150,089
Man-hours devoted to inspect nonpermit cargo	106,122	103,616
Pieces treated or cleaned	5,876,283	5,672,755
Export certificates issued	73,826	3,663,559
VI. <u>Quarantine Material Interceptions</u>		
Plant material (pieces)		
Intercepted from:		
Baggage	354,779	336,883
Cargo	3,408	2,779
Mail	3,163	2,414
Carrier quarters	39,180	37,036
Carrier stores	284,801	298,018
Total	685,331	677,130

^{4/} Mail preinspected at offshore locations.

SUMMARY OF ACTIVITIES--FY 1974
AGRICULTURAL QUARANTINE INSPECTION--CONTINUED

	<u>1974</u>	<u>1973</u>
Animal byproducts (pounds)		
Intercepted from:		
Ship passenger baggage	34,126	15,713
Air passenger baggage	175,601	151,885
Mail and express packages	13,010	14,005
Mexican border and others	<u>182,507</u>	<u>187,825</u>
Total	405,244	369,428

VII. Plant Pest Interceptions of Quarantine Interest

Insects	27,625	29,600
Disease (includes nematodes)	4,312	4,580
Other (includes mites and snails)	<u>2,449</u>	<u>2,886</u>
Total	34,386	37,066

VIII. Animal Byproduct Importations

Restricted entries	1,235	1,257
(pounds)	153,256,506	112,112,105
Unrestricted entries	30,642	27,208
(pounds)	748,993,149	529,522,066

IX. Propagative Material Importations (Includes Departmental)

	<u>Entered</u>	<u>Postentry</u>	<u>Treated</u>	<u>Refused Entry</u>
		<u>1974</u>		
Shipments	10,800	688	2,011	370
Plant Units	72,037,499	213,239	40,679,564	409,922
Seeds (pounds)	593,636	185	138,094	2,411
		<u>1973</u>		
Shipments	9,051	694	2,130	252
Plant Units	40,689,970	213,599	31,750,558	44,467
Seeds (pounds)	380,363	11,208	129,590	190

UNITED STATES DEPARTMENT OF AGRICULTURE
Animal and Plant Health Inspection Service
Hyattsville, Maryland 20782

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